**ALGEBRA 1** Name: Solutions

## *A Finely Crafted O'Brien Unit 2 Test*

**Calculator Section**: You may use a calculator. Use a pencil. Show all work and circle your answer. When you finish, put away your calculator and you can come up to get the non-calculator part—you may continue to work on both sections without your calculator.

1. Evaluate each expression.

a. $|5.2|$ 5.2

b. $|5-9|$ 4

c. What is the definition of the absolute value of a number?

Distance from zero on the number line.

2. Give an example of a number that is:

a. real but not rational

$\pi$ etc.

b. an integer but not a whole number

$-4$ etc.

c. rational but not an integer

$0.3$, $\frac{1}{4}$, etc.

d. a whole number but not a natural number

0

3. a. Write the reciprocal of 5.

$\frac{1}{5}$

b. Write the opposite of $\frac{3}{4}$.

$-\frac{3}{4}$

c. Is $-x$ always less than $x$? Justify your response.

No! $x$ could be negative...

4. An example of the commutative property of multiplication is $3 \cdot 4 = 4 \cdot 3$. Give an example of:

a. the commutative property of addition

$3+6=6+3$

b. the associative property of multiplication

$2 \cdot (5 \cdot 6) = (2 \cdot 5) \cdot 6$

c. the distributive property

$2(5+6) = 2 \cdot 5 + 2 \cdot 6$

5. Find the distance between $\frac{2}{3}$ and $-5\frac{2}{3}$ on a number line.

$\frac{2}{3} - \left(-5\frac{2}{3}\right) = 6\frac{1}{3}$

6. Evaluate and simplify

a. $3x+5x+4$

$8x+4$

b. $(2x-3)+(7-6x)$

$2x-3+7-6x$

$-4x+4$

c. $(2x+4y)-(5x-2y)$

$2x+4y-5x+2y$

$-3x+6y$

d. $-6x-(2x-7)$

$-6x-2x+7$

$-8x+7$

7. Simplify.

a. $7 \cdot 4x$

$28x$

b. $5(3x+6)$

$15x+30$

c. $\frac{9x-15}{3} = \frac{1}{3}(9x-15)$

$3x-5$

d. $2(3j-4k)-4(j+3k)$

$6j-8k-4j-12k$

$2j-20k$

8. If $a=-2$, $b=8$, $c=-3$, and $d=-7$, evaluate.

a. $a-b$

$-2-8$

$-2+-8$

$-10$

b. $a+(-b)+c+(-d)$

$-2+(-8)+(-3)+7$

$-6$

**NON-CALCULATOR** Name:_____

9. Open up your laptop and follow the link from your laptop. Write the number correct here.

_____ correct out of 16

10. Open up your laptop and follow the link from your laptop. Write the number correct here.

_____ correct out of 8

11. Open up your laptop and follow the link from your laptop. Write the number correct here.

_____ correct out of 8

12. Evaluate each expression. Show as much work as necessary.

a. $\dfrac{12\div 3+6\cdot 2}{4^2}$

$\dfrac{4+12}{16}$

1

b. $|16-2(4^2-9)|$

$16-2(7)$

$16-14$

2

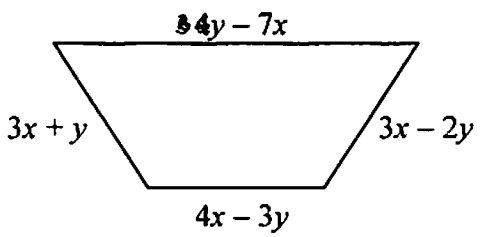
13. Find 4 integers whose sum is greater than zero and whose product is less than zero.

2/ 1, 2, 3, −1

$1+2+3+(-1)=5$ ✓

$(1)(2)(3)(-1)=-6$ ✓

14. Give an expression in simplified form for the perimeter of the trapezoid shown below.




$4y-7x+3x-2y+4x-3y+3x+y$

3x

15. Sometimes two algebraic expressions that look similar can have very different meanings. Take, for example, $5-(2c+7)$ and $-5(2c+7)$.

a. Simplify $5-(2c+7)$.

$5-2c-7$

$-2c-2$

b. Simplify $-5(2c+7)$.

$-10c-35$

16. Miss Take needs to simplify $7-2(x-3)$. Her working is shown at right.

$$\begin{aligned} &7-2(x-3)\\ &=5(x-3)\\ &=5x-15 \end{aligned}$$

a. Find the value of $7-2(x-3)$ when $x=5$.

$= 7-2(2) = 7-4$

$= 3$

PEMDAS!

b. Find the value of $5x-15$ when $x=5$.

$5(5)-15$

$= 10$

c. How do parts a. and b. show that Miss Take simplified $7-2(x-3)$ **incorrectly**?

Different!

d. What is the correct simplification of $7-2(x-3)$?

$7+2x+6$

$13-2x$

**Bonus**: Is it possible to select distinct integers $x$, $y$, and $z$ so that $x \cdot y = y$ and $x+z=x$? Why or why not?

Yes! $x=1$ $z=0$ $y=$ anything!

$1 \cdot y = y$ ✓

$1+0=1$ ✓